CLAIMS (TI-35498)

What is claimed is:

1. A method of downsampling a two-dimensional block of discrete cosine transform (DCT) coefficients, comprising:

(a) providing a two-dimensional block of DCT coefficients;

(b) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a first dimension of said block; and

(c) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a second dimension of the results of step (b).

2. The method of claim 1, wherein:

(a) said block is NxN; and

(b) de-interlacing IDCT is $\mathbf{x}_e = \mathbf{T}^t(N/2)\,\mathbf{z}_p + \mathbf{QT}^t(N/2)\mathbf{K}^t\,\mathbf{z}_r$, where $\mathbf{T}^t(N/2)$ is the $N/2$-point IDCT, $\mathbf{K} = \mathbf{RLR}^t$, where $\mathbf{R}$ is a bit-reversal permutation matrix; and $\mathbf{L}$ is a $N/2$ x $N/2$ lower-triangular matrix, and $\mathbf{Q}$ is a $N/2$ x $N/2$ diagonal matrix: diag[cos((4m + 1)$\pi/2N$)] for m = 0, 1, ..., $N/2$ –1.

3. The method of claim 1, wherein:

(a) said block is 8x8.

4. A method of downsampling a two-dimensional block of discrete cosine transform (DCT) coefficients, comprising:

(a) providing a two-dimensional block of DCT coefficients;

(b) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a first dimension of said block;

(c) applying a one-dimensional inverse discrete cosine transform (IDCT) with respect to a second dimension of the results of step (b); and

(d) downsample the results of step (c) with respect to said second dimension.

5. The method of claim 4, wherein:

(a) said block is NxN; and

(b) said de-interlacing IDCT is $\mathbf{x}_e = \mathbf{T}^t(4)\,\mathbf{z}_p + \mathbf{QT}^t(4)\mathbf{K}^t\,\mathbf{z}_r$, where $\mathbf{T}^t(4)$ is the 4-point IDCT, $\mathbf{K} = \mathbf{RLR}^t$, where $\mathbf{R}$ is a bit-reversal permutation matrix; and $\mathbf{L}$ is a $N/2$ x $N/2$ lower-triangular matrix, and $\mathbf{Q}$ is a $N/2$ x $N/2$ diagonal matrix: diag[cos((4m + 1)π/2N)] for m = 0, 1, ..., $N/2$ –1.

6. The method of claim 4, wherein:

(a) said block is 8x8.